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A MONTHLY DEVOTED TO THE
DISEASES OF INFANTS AND CHILDREN

JOHN FITCH LANDON, M.D., Editor

LEADING ARTICLES IN THIS NUMBER

A Physiologic Approach to the Problems of Constipation in Pediatric Practices.

*E. Montfort, M.D.
and C. P. Lynxwiler, M.D.* 407

Lymphatic Leukemia in an Older Mongoloid.

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Pediatrics at the Turn of the Century.

Tuberculous Cervical Lymph Nodes in an Infant of Four Months.

L. E. La Fétra, M.D. 421

The Relation of the Bacilli Belonging to the So-Called Dysentery Group to the Diarrheal Affections of Infants.

J. H. Mason Knox, Jr., M.D. 428

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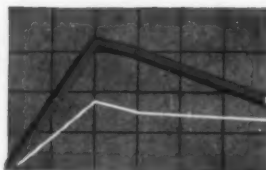
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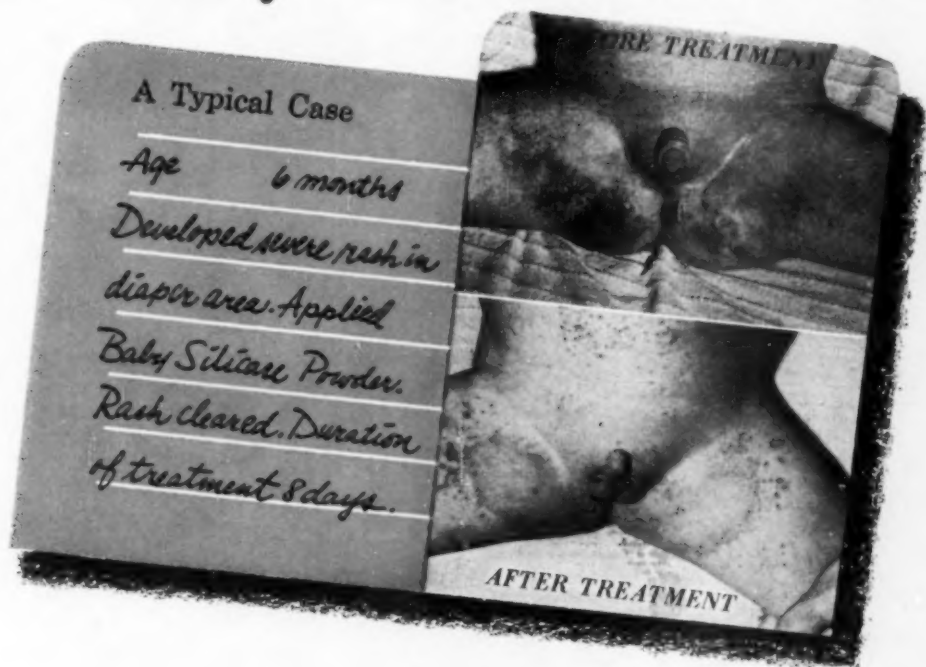
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A PHYSIOLOGIC APPROACH TO THE PROBLEMS OF CONSTIPATION IN PEDIATRIC PRACTICE

E. MONTFORT, M.D.*

and

C. P. LYNXWILER, M.D.*

St. Louis.

Dietary carbohydrate can not always be manipulated to satisfactorily control bowel function in pediatric patients. Such attempts, in many instances, result in the production of colic. Evidence of the need for improved methods in the management of constipation in the pediatric age group has been the innovation of fecal softeners. Although widely used and successful in many cases, these agents have lacked propulsive properties and often have required the simultaneous use of peristaltic stimulants. More recently, drug preparations containing fecal softeners and peristaltic stimulants have appeared.

Obviously, bowel atonicity is the chief underlying cause of constipation; otherwise, fecal matter would be evacuated regularly and not permitted to accumulate in dry, hard masses consequent to fluid resorption. The search for a solution to the problem appears to require a more basic physiologic approach in discovering a means of overcoming atonicity of bowel muscle. Several discoveries of importance to bowel physiology have been made in recent years by Lipmann, et al.,^{5,6} as well as by Bean, et al.^{1,2}

* The authors are affiliated with the St. Louis University School of Medicine and the Cardinal Glennon Memorial Hospital for Children, St. Louis, Missouri.

The Nobel prize winning work by Lipmann in 1953 represents a genuine contribution to a better understanding of bowel physiology. He and his associates discovered pantothenic acid to be an important element in the formation of the coenzyme A molecule. Physiological acetylating processes require coenzyme A including acetylation of choline. Acetylcholine, so formed, is vital to normal peristalsis, being required for transmission of nerve impulses to intestinal muscle.

At the clinical level, discoveries by Bean and his coworkers are far-reaching and demonstrate the profound effects of induced pantothenic acid deficiency on the human body. Of great significance to a wider knowledge of bowel physiology has been their demonstration of depressed acetylating activity in some of their pantothenic acid deficient human subjects. A depressed acetylation of choline most certainly is reflected by acetylcholine deficiency, atonic intestinal muscle and poor peristaltic activity. The outstanding results obtained by Kareha, et al.⁴ with parenteral Ilopan (pantothenyl alcohol) in relieving postoperative atonic intestinal distention, as well as results with the use of pantothenyl alcohol abroad^{5, 7, 8} appear to be convincing evidence of the importance of adequate pantothenic acid to normal acetylcholine production and peristalsis.

Because of this new evidence regarding the importance of pantothenic acid to normal peristalsis, it appeared to us to be worth evaluating the mild evacuant danthron** supplemented with pantothenic acid to encourage normal peristalsis.

This preparation was supplied in a palatable liquid form suitable for pediatric use and provided 37.5 mg. of danthron and 12.5 mg. of d-calcium pantothenate in each 5 cc. (95 drops from a Standard U.S.P. medicine dropper).** An unmedicated liquid of identical appearance was used as a control in one of the groups investigated (Group II).

A pilot study was conducted which included sixty patients for a period of eight months in an attempt to evaluate the effectiveness of danthron supplemented with pantothenic and D.P.A. All sixty patients had previously been treated with formula and dietary changes, enemas, suppositories and laxatives without a workable solution to the patients' problems. The patients studied were divided

** Danthron (1,8 dihydroxyanthraquinone) may produce a harmless reddish-orange color in the presence of an alkaline urine. It was supplied under the trade name "Modane Liquid" by the Warren-Teed Products Co., Columbus, Ohio.

into Groups I and II. The cases in Group I were thirty patients observed for an eight month period in a general pediatric office with no attempt to establish a control series. The patients in this group varied in age from two months to twelve years. There was only one child (Case 27) who did not respond to therapy by the fifth day. In two cases the dosage had to be increased. A good response to therapy was considered to be the occurrence of daily passage of soft stool.

Each child received one dose, as indicated in Table I, each evening. Table I represents the results obtained in this group of patients.

TABLE I. Group I: 30 Cases

Case	Name	Age	Wt.	Dose	Results
1	J. H.	2 mos.	14#	30 gtt.	Good 3rd day
2	B. T.	4 mos.	17#	15 gtt.	Good 3rd day
3	S. E.	4 mos.	13#	15 gtt.	Good 3rd day
4	C. L.	8 mos.	19#	15 gtt.	No Results; increased to 30 gtt.; good 3rd day.
5	J. K.	8 mos.	20#	15 gtt.	Good 4th day
6	M. W.	1 yr.	24#	30 gtt.	Good 4th day
7	R. H.	2 yrs.	27#	30 gtt.	Good 4th day
8	C. D.	2 yrs.	31#	30 gtt.	Good 4th day
9	J. B.	2 yrs.	34#	30 gtt.	Good 4th day
10	M. L.	2 yrs.	27#	30 gtt.	Good 4th day
11	J. A.	2 yrs.	28#	30 gtt.	No results; increased to 60 gtt.; good 3rd day.
12	C. S.	2½ yrs.	27#	45 gtt.	Good 2nd day
13	S. D.	2½ yrs.	35#	45 gtt.	Good 3rd day
14	K. S.	3 yrs.	39#	40 gtt.	Good 4th day
15	M. N.	3 yrs.	34#	40 gtt.	Good 4th day
16	P. F.	3 yrs.	30#	30 gtt.	Good 4th day
17	P. S.	3 yrs.	31#	30 gtt.	Good 3rd day
18	T. S.	4 yrs.	38#	30 gtt.	Good 3rd day
19	M. D.	4 yrs.	37#	30 gtt.	Good 3rd day
20	J. F.	4 yrs.	36#	30 gtt.	Good 3rd day
21	M. P.	6 yrs.	48#	40 gtt.	Good 4th day
22	D. E.	10 yrs.	54#	60 gtt.	Good 4th day
23	M. S.	11 yrs.	68#	60 gtt.	Good 4th day
24	M. T.	10 yrs.	54#	60 gtt.	Good 4th day
25	I. M.	11 yrs.	58#	60 gtt.	Good 4th day
26	M. J.	10 yrs.	54#	60 gtt.	Good 4th day
27	J. S.	11 yrs.	60#	60 gtt.	No results even with increase to 120 gtt. daily.
28	F. J.	12 yrs.	62#	60 gtt.	Good 4th day
29	M. M.	12 yrs.	59#	60 gtt.	Good 4th day
30	M. J.	12 yrs.	63#	60 gtt.	Good 4th day

The results in Group I were so gratifying that it was decided to study a similar group in the Out-Patient Department of the Cardinal Glennon Memorial Hospital for Children with adequate controls. For this purpose, two unknown solutions were supplied to the personnel of the Out-Patient Department for the study. One solution contained the D.P.A. the other being a placebo of identical taste and color.

These solutions were labeled 71C148 and 71C147 and they were used on alternate cases, one dose each evening as indicated in Table II. It became quite apparent after the first twelve cases which liquid contained the danthron and d-calcium pantothenate (71C148). Table II represents the results obtained in Group II.

TABLE II. Group II: 30 Cases—Control

Case	Name	Age	Wt.	Drug	Dose	Results
1	L. D.	3 mos.	12 $\frac{1}{2}$ lbs.	71C148	30 gtt.	Good 5 days
2	C. S.	3 mos.	13 $\frac{1}{2}$ lbs.	71C147	30 gtt.	No results—7 days
3	D. B.	4 mos.	14 $\frac{1}{2}$ lbs.	71C148	30 gtt.	Good 5 days
4	Y. B.	3 mos.	11 $\frac{1}{2}$ lbs.	71C147	30 gtt.	No results—7 days.
5	C. M.**	7 mos.	16 $\frac{1}{2}$ lbs.	71C148	30 gtt.	No results; increased to 60 gtt.; no results—7 days.
6	P. H.	7 mos.	11 $\frac{1}{2}$ lbs.	71C147	30 gtt.	No results—7 days.
7	L. O.	9 yrs.	62 $\frac{1}{2}$ lbs.	71C148	60 gtt.	Good 4th day
8	B. R.†	8 yrs.	54 $\frac{1}{2}$ lbs.	71C147	60 gtt.	No results
9	J. H.	8 yrs.	60 $\frac{1}{2}$ lbs.	71C148	60 gtt.	Good 5th day
10	S. B.	8 yrs.	52 $\frac{1}{2}$ lbs.	71C147	60 gtt.	No results—7 days.
11	B. W.	12 yrs.	86 $\frac{1}{2}$ lbs.	71C148	60 gtt.	Good 5th day
12	S. T.†	8 mos.	18 $\frac{1}{2}$ lbs.	71C147	30 gtt.	No results—7 days.
13	R. G.	2½ yrs.	32 $\frac{1}{2}$ lbs.	71C148	60 gtt.	Good 5th day
14	J. G.	1 yr.	22 $\frac{1}{2}$ lbs.	71C147	60 gtt.	No results—7 days.
15	C. S.	2 yrs.	28 $\frac{1}{2}$ lbs.	71C148	60 gtt.	Good 5th day
16	D. C.†	1½ yrs.	24 $\frac{1}{2}$ lbs.	71C147	60 gtt.	No results—7 days.
17	R. F.	8 yrs.	68 $\frac{1}{2}$ lbs.	71C148	60 gtt.	Good 5th day
18	M. T.	3 yrs.	36 $\frac{1}{2}$ lbs.	71C147	60 gtt.	No results—7 days.
19	B. B.	7 yrs.	60 $\frac{1}{2}$ lbs.	71C148	60 gtt.	Good 5th day
20	L. F.	7 yrs.	60 $\frac{1}{2}$ lbs.	71C147	60 gtt.	No results—7 days.
21	M. B.	4 yrs.	45 $\frac{1}{2}$ lbs.	71C148	60 gtt.	Good 5th day
22	M. S.†	2 yrs.	32 $\frac{1}{2}$ lbs.	71C147	60 gtt.	No results—7 days.
23	C. S.	6 yrs.	58 $\frac{1}{2}$ lbs.	71C148	60 gtt.	Good 5th day
24	F. H.	4 mos.	16 $\frac{1}{2}$ lbs.	71C147	30 gtt.	No results—7 days.
25	G. S.	11 yrs.	84 $\frac{1}{2}$ lbs.	71C148	60 gtt.	Good 5th day
26	B. D.	12 yrs.	97 $\frac{1}{2}$ lbs.	71C147	60 gtt.	No results—7 days.
27	M. T.	3 yrs.	32 $\frac{1}{2}$ lbs.	71C148	60 gtt.	Good 5th day
28	S. J.	7 yrs.	62 $\frac{1}{2}$ lbs.	71C147	60 gtt.	No results—7 days.
29	E. E.	9 mos.	19 $\frac{1}{2}$ lbs.	71C148	60 gtt.	Good Results
30	T. E.	2 yrs.	30 $\frac{1}{2}$ lbs.	71C147	60 gtt.	No results—7 days.

** Of the odd numbered cases (15) in Group II who received the active drug 71C148, only one case (Case #5) failed to respond. Case #5 was later put on 71C147 (placebo) for an additional week with no response.

† The 15 even numbered cases who had initially received the liquid 71C147 (placebo) and who had failed to respond at the end of one week were then given a comparable dose of the active drug, liquid 71C148. Of these 15 patients only four cases (cases #8, 12, 16, and 22) failed to have normal soft stools by the end of 5 days.

DISCUSSION

In the entire group of sixty patients studied, the results were good in fifty-four instances with six failures, one in Group I and five in Group II; thus, the preparation was effective in 90 per cent of the cases studied. The reason for failure of the six instances is not clear to us at this time. In all cases the patient acceptance of the preparation was good. There were no instances of vomiting, cramping or abdominal pain and no evidence of allergic manifestations.

The patients were kept on D.P.A. for two weeks and the drug was then discontinued. In all instances except one, the stools remained normal for at least two weeks before it became necessary to re-institute therapy. In several instances the interval between therapy was as long as a month. One patient (Case 3, Group II) experienced a return of constipation within 48 hours each time the medication was discontinued.

SUMMARY

Sixty pediatric cases were treated for constipation using D.P.A. in doses ranging from 15 drops to 60 drops each evening with good results in 90 per cent of the cases treated. D.P.A. appears to be a safe and effective means of treating constipation in the pediatric age group.

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Vaccination with Avianized Smallpox Vaccine. M. Weichsel and E. G. Herrera. (*J. Pediat.*, 50:1-5, Jan. 1957). This report is concerned with observations on children vaccinated with chick embryo-type vaccines. Glycerinated chick embryo vaccine was administered to 285 children; sorbital-stabilized fluid chick embryo vaccine to 44 children; and vacuum-dried, sorbitol-stabilized chick embryo vaccine to 85 children. The children ranged in age from 3 months to 12 years. The results were satisfactory, with a large percentage of susceptible children showing primary takes. Side-reactions were mild, and no complications ensued. The advantages of employing vaccinia virus material prepared on the chorioallantoic membrane of the developing chick embryo are discussed.

—J.A.M.A.

LYMPHATIC LEUKEMIA IN AN OLDER MONGOLOID*

FATMA MUNIRE ESEN, M.D.**

Pathologist.

Within the last 27 years there have been few reports of mongoloids who have died of leukemia. The first case of leukemia in an 11-month-old mongoloid boy was reported by Brewster and Cannon in 1930. The cases published from that time to date are shown in Table I.

TABLE I. CASES FROM LITERATURE

Author	No. of Cases	Age	Sex	Type	
				Myelogenous	Lymphatic
Brewster & Cannon	1930	1	11 mos.	M	+
Bernhard, Gore & Kilby	1951	1	19 hrs.	M	+
Schunk & Lehman	1954	1	11 dys.	F	+
O'Connor, McKey & Smith	1954	1	5 dys.	M	+
Bernard, Mathie & Bernoud	1955	3	16 mos.	—	+
			16 mos.	—	+
			12 mos.	—	+
Merritt & Harris	1956	4	10 yrs.	F	+
			4 yrs.	M	+
			3 yrs.	F	+
			2 yrs.	F	+
Krivit & Good	1956	5	2 yrs.	F	—
			3 dys.	M	+
			7 dys.	M	+
			2½ yrs.	F	+
Storts	1956	1	6 yrs.	M	—
Author's case	1	19½ yrs.	M		+

A mongoloid boy of nineteen and a half years died at Wrentham State School recently of lymphatic leukemia. The relationship between mongolism and leukemia is not clear, since the etiology of both diseases is not fully understood. Therefore, it seems necessary to report any case of leukemia in mongoloids, as additional information, for the better understanding of these conditions.

CASE REPORT.

G.G., a white mongoloid boy was born on December 4, 1937 at eight months of pregnancy. The cord was wrapped around the neck at delivery. Birth weight was 8 pounds (3600 gms.). The mother was 39 years of age at birth of the patient and this was her ninth pregnancy. The seventh pregnancy resulted in a miscarriage, and there were three miscarriages after the birth of

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patient. The other siblings are healthy and of normal intelligence. The mother died in 1953 of meningoencephalitis. A maternal aunt of the patient has been in a mental hospital for the past 15 years for psychosis. The father is healthy and of normal intelligence. The patient began to walk at the age of 2 years and to talk at 5 years. He was admitted to the Wrentham State School on February 25, 1954 at the age of 16 years, 2 months. The *physical examination* on admission showed a mongoloid boy who weighed 59 kg. and was 147 cm. tall. The head measured 52 cm. in circumference, 14.7 cm. in width and 14.5 cm. in length. The occiput and vertex were markedly flat. He had brown eyes with heterochromic irises, epicanthal folds, alternating internal strabismus, small nose with broad nasal bridge, flattened helices, adherent lobules, high palate, large fissured tongue, broad short neck, short extremities, especially short hands with stubby fingers. There were multiple scars on the nape of his neck and shoulders from previous skin infections. The Hinton test was negative. His blood was Rh positive and blood group A. The *psychological examination* revealed a mental age (M.A.) of 4 years and 8 months, and an I.Q. of .29.

Course: The patient's health was good in general until February 1955 at which time he had a carbuncle on the nape of the neck. Culture from the carbuncle showed *Staphylococcus aureus*. In spite of treatment the patient developed severe generalized furunculosis, which was resistant to treatment and remained more or less active until his death. In April 1957, he looked pale and developed pain in the left elbow and was admitted to our hospital. Later, his right elbow and wrist began to swell and he developed pain. There was also some tenderness of the right ankle which was accompanied by fever and a sedimentation rate of 60 mm. The clinical features at this time suggested the possibility of rheumatic fever. Coomb's test was negative. On April 10, 1957, blood tests showed NPN 25 mg. per cent, serum creatine 1.2 mg. per cent, blood sugar 120 mg. per cent, serum total cholesterol 194 mg. per cent, serum chloride 581 mg. per cent. From admission until his death, the patient had a total number of seven diagnostic x-rays, of which four were negative. The chest x-ray on April 11 showed evidence of peribronchitis without parenchymal consolidation. The x-ray examination of the hands on April 25 showed periarticular soft tissue thickening around some of the fingers which was in-

TABLE 2. DATA CONCERNING BLOOD EXAMINATION

Date	HGB	RBC	WBC	Seg- mented Polys	Young Lym.	Small Lym.	Atypi- cal Lym.	Lym- pho- blasts	Eos.	Monos.	Reti.	Erythro- blasts	Smudge Cells	Raies.	Plate.
Feb. 25, 1954	13.2 gm.	5,870,000	6,850	60%	—	28%	—	—	1%	3%	—	—	—	1%	Normal
Aug. 6, 1954	12.6 gm.	4,870,000	7,600	63%	—	19%	—	—	9%	2%	—	—	—	—	Normal
Dec. 8, 1955	14.9 gm.	5,500,000	9,300	66%	—	15%	3%	—	—	3%	7%	—	—	1%	Normal
Mar. 5, 1956	15.5 gm.	5,100,000	9,000	66%	—	15%	3%	—	—	3%	7%	—	—	—	Normal
July 3, 1956	13.0 gm.	6,300	6,300	60%	—	25%	8%	—	7%	3%	1%	—	—	—	Normal
Apr. 10, 1957	10.2 gm.	3,500,000	9,300	11%	22%	55%	4%	1%	3%	1%	—	—	—	—	Normal
Apr. 15, 1957	8.5 gm.	2,500,000	7,500	17%	39%	41%	2%	—	—	—	1%	—	—	—	Slightly decreased
Apr. 17, 1957**	7.3 gm.	2,400,000	5,100	15%	37%	45%	—	—	2%	—	2%	—	—	—	Moderately decreased
Apr. 18, 1957	9.9 gm.	3,000,000	7,500	10%	51%	35%	—	—	1%	2%	1%	—	—	—	Moderately decreased
Apr. 22, 1957	9.8 gm.	3,100,000	9,900	9%	9%	77%	—	1%	3%	1%	—	—	Several	—	Moderately decreased
Apr. 24, 1957	9.1 gm.	3,500,000	10,800	3%	68%	23%	2%	1%	—	—	—	—	Numerous	—	markedly decreased
Apr. 29, 1957**	7.2 gm.	2,400,000	5,300	6%	49%	38%	4%	1%	1%	—	—	—	Numerous	—	Moderately to markedly decreased
May 2, 1957	4.9 gm.	1,400,000	1,500	2%	26%	71%	—	—	—	—	—	—	Numerous	—	markedly decreased
				(very in heavy) mitosis)											

* Toxic Granulation

** Blood Transfusion

terpreted as an early manifestation of "dermatoid arthritis". The last chest x-ray, taken the day before patient's death, showed clearing of the perihilar markings which could represent some resolution of the peribronchitis previously described. The patient often complained of headache and nausea. His appetite became poor, and he vomited frequently. There was still some purulent discharge from the neck in spite of treatment with large doses of antibiotics. The blood figures on admission until the patient's death which confirmed the diagnosis of lymphatic leukemia are given in Table 2. Near the terminal stage he complained of pain in his feet and fingers in addition to pain in his right elbow, wrist, ankle and left elbow. He became restless, lost weight, and slept very little. During the illness, his temperature varied between 98°F. to 105°F., pulse 70 to 158, and respiration from 20 to 42 per minute. On May 3, 1957, the patient refused medication and fluids by mouth, complaining that he could not swallow. He had marked dyspnea. Oxygen was administered. His blood pressure was 100/80, temperature rose to 105°F., pulse 158 per minute. He seemed very restless, vomited frequently and complained of pain in his arms. He died the same day, at the age of 19 years, 4 months; twenty-seven days after onset of the disease in spite of repeated transfusions. Shortly before his death, the spleen was moderately palpable. Autopsy was performed eight hours after death.* The cause of death was laryngeal edema, and lymphatic leukemia. The body was that of a white mongoloid male. The posterior aspect of the body showed numerous furuncles in the skin, many of them being more or less confluent. There were several enlarged, pink to bluish-red lymph nodes in each axilla and in each supraclavicular area which measured up to 3 cm., in greatest diameter. The liver margin was 8 cm. below the xiphoid and was at the costal margin in the right midclavicular line.

The free margin of the right lobe of the liver was markedly rounded. There was a Meckel's diverticulum approximately 45 cm. proximal to the ileo-cecal junction which measured 2.5 cm. by 0.8 cm. The remainder of the gastro-intestinal tract showed no gross changes. There was a fusion of the costal cartilage of the fourth and fifth rib on the right side. Three enlarged lymph nodes in the retrosternal fat in the lower portion of the media-

* The autopsy was performed by Dr. Roland Berry (Pondville Hospital, Walpole, Mass.) in the temporary absence of the author.

stinum, in midline, were observed. Several fibrous adhesions between the right lung and parietal pleura, anteriorly and posteriorly were noticed. The pericardial sac contained approximately 125 cc. of clear straw colored fluids. The pericardium was smooth and glistening throughout. The heart weighed 260 gms. and showed no gross pathological changes. The myocardium was reddish brown, its thickness in the left ventricle measured 1.3 cm. and 0.4 cm. in the right ventricle. The left lung weighed 430 gms., the right 420 gms. Each lung was composed of two lobes. Cut surfaces of the lungs were mottled red and yellow in general. The liver weighed 1780 gms. The cut surfaces were yellowish brown throughout with the hepatic pattern somewhat obscured. The spleen weighed 390 gms. The splenic capsule was smooth, bluish-red and glistening throughout. The cut surfaces were deep red with poorly defined trabeculae and lymphoid follicles. The esophagus was unremarkable. The entire larynx, including epiglottis and vocal cords, was markedly edematous (diffuse leukemic infiltration). The mucosa of the entire larynx revealed marked ulceration with extensive necrosis. The trachea was unremarkable. The thyroid weighed 16 gms.; cut surfaces were reddish-tan and glistening. There were numerous slightly enlarged peritracheal and periesophageal lymph nodes. The left kidney weighed 200 gms., the right 170 gms. The capsule stripped with moderate ease revealing smooth pale reddish-brown surfaces. The cut surfaces showed the usual renal pattern, somewhat accentuated by moderate pallor of the cortex, injection of the cortico-medullary junction, and pallor of the medullary papillae. There were scattered petechiae in the mucosa of the renal pelvis on each side. The pelvis and the calyces were of average configuration. The adrenals each weighed 10 gms.; the cut surfaces showed a yellowish-brown cortex and a small amount of gray medullary substance. The urinary bladder was unremarkable. The prostate was small, cut surfaces were pale tan. The testes were somewhat small; cut surfaces were brownish-yellow and finely granular. The blood vessels were unremarkable in general. There were numerous moderately enlarged, pink lymph nodes in the para-aortic, iliac and portal areas, measuring up to 4.0 cm. in greatest diameter. The mesenteric lymph nodes were also moderately enlarged. The brain weighed 1180 gms., and showed the features usually seen in mongoloids, such as short frontal lobes; retroflexion of the frontal poles; deep depression

of the orbital gyri; broad flat gyri on both cerebral hemispheres; short temporal lobes with broad gyri and fused sulci; thin and narrow cerebral vessels, etc. The brain substance was markedly pale in general. The pial vessels were moderately injected, especially on the left cerebral hemisphere. The pia showed slight thickening over the convexity of cerebral hemispheres and cerebellum. The dura was markedly thick and the venous sinuses were smooth. The pachionian bodies were well developed, especially along the longitudinal fissure. The olfactory bulb, olfactory tract, optic nerve, otic chiasma and cranial nerve were within normal limits. The mammillary bodies were well differentiated. There was a large pin head size, round protrusion on the midline above the mammillary bodies. The cerebellum showed moderate cleft with hypoplasia. There were no striae medullares present. The cut surfaces of the brain revealed moderate hyperemia; but no hemorrhages were seen by gross examination. The pituitary gland weighed 2 mg. and was markedly hypoplastic.

Microscopic examination: The lymph nodes, larynx, bone marrow, liver, kidneys, adrenal glands, dura, brain, pericardium and

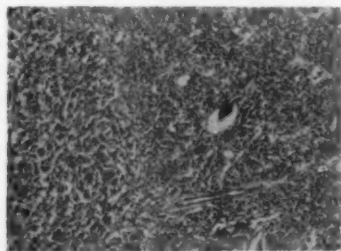


Fig. 1-A: Photomicrograph shows diffuse infiltration of the lymph nodes by malignant lymphoblasts more marked on the right. Hematoxylin and eosin stain. X 85.

lungs were infiltrated by the malignant lymphoblasts which showed wrinkled vesicular nuclei and a definite rim of cytoplasm with numerous mitoses. The entire larynx was infiltrated with masses of malignant lymphoblasts and showed diffuse necrosis as well as hemorrhages. The thyroid and arytenoid cartilages showed ossification with vascular and loosely textured fibrous bone marrow, which was also infiltrated by the malignant lymphoblasts in most

areas. In the lymph nodes, the normal structures were almost replaced by malignant lymphoblasts which invaded the capsule and the neighboring fat tissue. The liver showed focal infiltration of

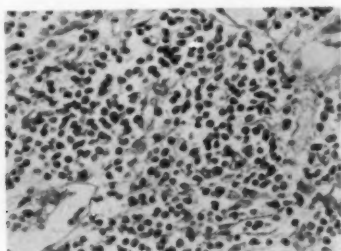


Fig. 1-B: Photomicrograph shows magnification of Fig. 1A. Note definite rim of cytoplasm and wrinkled vesicular nuclei. Hematoxylin and eosin stain, X 350.

malignant lymphoblasts in the periportal spaces as well as sub-capsular accumulations. The liver cells revealed marked glycogenic vacuolisation and fatty degeneration with hemorrhage and necrosis about the central veins. The splenic pulp contained a large amount of malignant lymphoblasts very much more noticeable about the vessels. A few megacaryocytes were also seen in the splenic pulp. Examination of the other fields from the spleen revealed fresh infarcts. The kidneys showed multiple focal interstitial infiltration

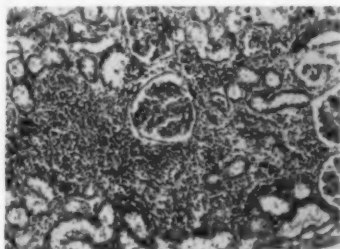


Fig. 2: Photomicrograph shows infiltration of the kidney parenchyma by malignant lymphoblasts. Hematoxylin and eosin stain, X 85.

of malignant lymphoblasts in the cortex as well as in the medulla, especially perivascular. There was also infiltration of the malignant lymphoblasts in the adrenal parenchyma, both in cortex and

medulla. The testes were moderately infiltrated by malignant lymphoblasts. The bone marrow sections from the ribs and vertebrae showed almost complete replacement of the marrow by mass of malignant lymphoblasts which also extensively infiltrated the periosteum and surrounding fat tissue. The widened Haversian spaces were filled by malignant lymphoblasts. The bone trabeculae

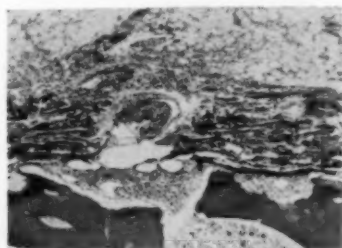


Fig. 3: Photomicrograph shows infiltration of the bone marrow, periosteum and surrounding fat tissue by the malignant lymphoblasts. Hematoxylin and eosin stain. X 50.

showed necrosis in some areas. The megacaryocytes were sparse but appeared normal. The pulmonary capillaries were congested. Small amounts of malignant lymphoblasts were seen in the alveolar walls and about the vessels of the lungs. The pericardium was mildly infiltrated by the malignant lymphoblasts. The serosa of the stomach showed also mild infiltration of the malignant lymphoblasts. The sections of the brain revealed scattered fresh hemorrhagic foci and slight infiltration of malignant lymphoblasts about the vessels with other characteristic findings for mongoloids. Also, numerous small calcified foci and multiple amyloid bodies were seen in the brain. The remaining organs showed no leukemic infiltrations but they revealed hyperemia.

The *pathological anatomical diagnosis*: Lymphatic leukemia, generalized lymphadenopathy, splenomegaly, diffuse laryngeal edema, congenital malformation of the costal cartilage and of the right lung, Meckel's diverticulum, furunculosis of skin, mongolism.

DISCUSSION

It has often been stated that leukemia in mongoloids occurs in a higher percentage than in the general population which according

to Cook, is 5/100,000. This is unquestionably true of leukemia in the newborn (Krivit and Good). Lymphatic leukemia in older mongoloids, as in the case of our patient, seems to be rather rare and, etiologically, probably should not be connected with mongolism. Leukemia, from our observation, could be in a sense the sequence of the chronic recurrent skin infections.

SUMMARY

A lymphatic leukemia is reported in an older mongoloid boy who suffered from chronic skin infection.

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Morgagni-Adams-Stokes Syndrome in Infancy: Synthetic Review and Clinical Contribution. M. Bolletti. (*Pediatrics*, 65:361-386, May-June 1957). The author describes two instances of Morgagni-Adams-Stokes syndrome in 2 children. In one, a 4½-year-old child, the syndrome was observed in the course of rheumatic heart involvement, and in another, a 3-year-old child, in the course of a severe diphtheritic infection. The first child presented an early rheumatic carditis with involvement of conduction causing a total atrioventricular block. Electrocardiography showed severe damage to the myocardium. In this child total atrioventricular dissociation with severe bradycardia was the predominant factor in the mechanism of the Morgagni-Adams-Stokes syndrome.—*J.A.M.A.*

PEDIATRICS AT THE TURN OF THE CENTURY

From time to time the Archives, which was the first Children's Journal in the English language, will reprint contributions by the pioneers of the specialty over fifty years ago. It is believed that our readers will be interested in reviewing such early pediatric thought.

TUBERCULOUS CERVICAL LYMPH NODES IN AN INFANT OF FOUR MONTHS*

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New York.

Simple acute adenitis is common in early infancy; but tuberculous adenitis is very unusual, in this country at least. This case is reported because of its rarity and because of certain interesting questions that arise in connection with it.

The family history of the little patient sheds no light upon the origin of the affection. Both parents are living and well; neither has ever had a sign or symptom suspicious of tuberculosis on any part of the body. The sister of the patient, a little girl of four-and-a-half years, has been under my care since birth, as a feeding case, and has never had a prolonged cough nor any tuberculosis of the lymph nodes, bones or joints. No nurse nor any servant nor any visitor to the house since the infant's birth has had a prolonged cough. The father of the patient had several colds in the head, repeated one after another, for some weeks before and after the time of the infant's birth.

Personal history. Allan G. N., Jr. was born October 12, 1905 at full term, the result of the second pregnancy. He was strong and healthy, weighing seven pounds and six ounces at birth. Because of scanty breast milk his nourishment from the beginning was a combination of maternal nursing and bottle feeding. The artificial food was made from the milk of a well-known dairy which has the certification of the New York County Medical Society. The milk is produced under the best conditions upon a model farm;

* Read before the Eighteenth Annual Meeting of the American Pediatric Society held at Atlantic City, N. J., May 30, 1906.

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the cattle are Jerseys and Alderneys. After a small initial loss in weight the baby began to gain nicely, weighing eight and one-half pounds when three weeks old, a gain of eighteen ounces in the first twenty-one days. The weather being fine he was sent out of doors after the second week, and all went well until he was about three weeks old, November 4, when he developed a cold in the head, snuffling and snorting to get his breath, especially during the latter part of the night. There were no signs in the chest, and the temperature was not over 100° F. This head cold passed off in one week and the baby was well until November 23, when, at the age of seven weeks, he developed a second cold, this time in the head, throat, tonsils and chest. The tonsils, especially the right, showed a little exudate in the follicles, but very little redness or swelling; there were a few large râles in the chest. The temperature gradually fell from 102° F. the first day to normal on the fourth day.

Under inhalations and internal treatment these conditions were soon improved and the baby was well, save for some snuffling, for two weeks. On December 11, the baby had the third attack of "cold," this time more severe than before. There was fever up to 102° F., much prostration, dyspnea with respirations 60, and the signs of a generalized bronchitis involving the finer tubes. On the fifth day of this attack, Dr. Holt saw the baby with me in consultation, and there was serious question of bronchopneumonia. It was decided, however, that the baby had only a severe bronchitis, probably a part of the general grip infection of which it was difficult to get rid. This attack lasted thirteen days, the temperature reaching normal on December 24, and the chest signs disappearing soon afterward. On December 21, however, when the baby was ten weeks old, there had been a rise of temperature to 101 $\frac{3}{8}$ ° F., and at that time there appeared a slight swelling of the right side of the neck, in front of the sternomastoid muscle; this swelling consisted of three lymph nodes and remained the same size for about ten days; then it increased rapidly for a few days, but without rise of temperature over 100 $\frac{1}{2}$ ° F. By January 18, it was as large as a walnut and quite hard and the node outlines were lost. Then the swelling diminished, and by January 29 the three nodes were again distinctly felt, firm, not tender and movable. For ten days they remained about stationary, perhaps a little smaller, and then the perinodular swelling reappeared and the whole mass be-

came much larger. The outlines of the separate nodes were lost and there was indistinct fluctuation in the tense lobulated mass.

Because of the tender age of the patient, I called in consultation Dr. Charles N. Dowd, whose experience in cervical lymph node cases is probably unsurpassed in this country. He thought the condition probably subacute suppurative adenitis and in accordance with his advice it was planned to open the abscess before the skin became badly involved. On February 17, under ethyl chlorid anesthesia, Dr. Dowd operated on the neck swelling. Upon reaching the lymph nodes they were found quite large, soft and hyperplastic; there was no suppuration, contrary to both our expectations, and the nodes when opened showed greyish granular material, but no distinct pockets of liquefaction. There was very little fibrous tissue about the lymph nodes. No attempt was made to do a complete extirpation of all the lymph nodes palpable in the wound; only the largest and most accessible were removed.

A few days later Dr. William C. Clarke reported the microscopic examination from the Department of Pathology of the College of Physicians and Surgeons as follows: "The lymph nodes from the cervical region of Baby N., operated on by Dr. Dowd, February 17, are enlarged and softened. Microscopic examination shows extensive early tuberculosis. There are many areas of degeneration and necrosis in the lobules of the nodes. These areas are surrounded by a slight amount of productive inflammation." On account of his interest in this peculiar case, Dr. Clarke showed the sections to several other workers in the laboratory, who confirmed his diagnosis.

The subsequent course and appearance of the wound have been and are typical of tuberculosis; cheesy sloughs continue to come away from the deeper nodes involved, and the skin edges have the blue gelatinous appearance which is diagnostic of this form of inflammation. The mass of the swollen glands in the neighborhood is becoming smaller, and altogether the wound is doing very well. Repeated careful examinations of the lungs, the last time on May 25, fail to show any signs of tuberculosis, either of the lung or of the bronchial lymph nodes. The infant's digestion has been excellent all along, and his general condition is very good, considering the constant drain of the discharging wound. At the time of the operation, February 17, his weight was twelve pounds, six ounces; on May 24 he weighed fourteen pounds, thirteen

ounces, a gain of two and one-half pounds in a little over three months.*

How shall one account for the tuberculous cervical lymph nodes in this case? It is probable that the first "cold" was taken from the father or from the street dust, and that later, perhaps, through the inflamed tonsil or nasopharynx, the tubercle bacilli penetrated to the lymph streams leading to the deep cervical nodes.

In connection with this case, it is of interest to consider, first, the frequency of tuberculous cervical lymph nodes in infancy; second, the source of infection in these cases; and third, the question of latent tuberculosis of the lymph nodes.

RARITY OF TUBERCULOUS CERVICAL LYMPH NODES IN INFANCY.

Although there are abundant statistics upon tuberculous lymphadenitis, there are very few authors that report cases of the disease in early infancy. The cases are grouped as "one to five years," or "one to ten years," as a rule. The affection is very common about the age of the second dentition. Billroth reports that in his experience scrofulous and tuberculous lymphadenitis occurs most frequently between eight and twenty years, but may appear at any age from one to sixty years. He says that the small glandular swellings that come under observation in children under five years old prove mostly to be acute or subacute abscesses. Fränkel made a strong distinction between scrofulous and tuberculous lymph nodes, considering the former a disease of childhood, the latter a disease occurring most frequently between fifteen and thirty years. Among 148 tabulated cases, there was only one of Fränkel's under five years.

Fischer, collecting 1,484 cases from various authors, found 59, or 3.9 per cent., under five years of age. Many authors with an experience of over 100 cases had seen only one or two under five years. Grünfeld, in 214 cases, not one under five years. In contrast to these are the reports of Manson, who had seventeen under five years in 95 cases, and Gellhaus, who had eight under five years among 60 cases. Wohlgemuth, however, among 430 cases found the ages as follows: Up to one year, 54 cases, or 12.5 per cent.; from one to three years, 104 cases, or 24.15 per cent.; from three to five years, 46, or 10.7 per cent.; from five to ten years, 90, or

* During the summer of 1906, while away in the country, the baby succumbed to what was apparently an acute enterocolitis: no necropsy was obtained. The wound had never healed.

20.8 per cent.; altogether, 68 per cent. of cases under ten years. Wohlgemuth's¹ figures are so different from all others that they demand an explanation. This is to be found in the fact that his cases are drawn from the out-patient service of the Jewish Hospital, and that these patients are mostly infants and young children living in most unsanitary conditions. As to the region of the body occupied by the affected lymph nodes, the neck was implicated in 93 per cent. of Wohlgemuth's cases. Harbitz, in his study of latent tuberculosis, referred to later, found 10 cases in patients under one year. Among these the cervical lymph nodes were involved in 9 cases, and alone eight times.

In this country comparatively little has been written on the subject; but what evidence there is goes to prove that in infants the condition is very unusual. Freeman reports that in 158 autopsies on tuberculous subjects at the New York Foundling Hospital the cervical lymph nodes were macroscopically involved in only 14 cases, or 9 per cent. He considers tubercular cervical lymph nodes as very rare in infants, but frequently the first lesion after the third year. Dowd writes me that my patient is the only case under one year that he has seen in a personal experience of 200 or more cases of tuberculous cervical lymph nodes and that he has had very few under the age of two years. Among 61 of his reported cases, only three were under three years of age.

We are, then, I think, justified in concluding that while tuberculosis of the cervical lymph nodes does occur in a small per cent of cases in patients under three years, the great majority of these cervical swellings are not tuberculous, and that the chances against tuberculosis increase inversely with the age of the patient, i.e., the younger the patient the less the probability that the swollen lymph nodes are tuberculous, and the greater the chance that they are simple inflammatory enlargements due to ordinary pyogenic cocci.

Source of infection. In any particular case it may be impossible during life, or even after necropsy, to determine the original site of invasion or the source of infection. Breathing and swallowing are, of course, the only possible avenues of infection, and invasion must take place in the case of the cervical lymph nodes through the mucous membrane of the nasopharynx, oropharynx, tonsils or adenoids. Tracing the infection backward from the lymph nodes along the lymph vessels that drain into the deep

cervical chain, one comes upon the tonsils, the adenoids and the nasopharyngeal mucous membrane as the most likely sites of invasion. It is believed by many that the most frequent local sources of infection of the cervical lymph nodes are hypertrophied tonsils and adenoids. Either the tonsils and adenoids may be tuberculous, or they may in their inflamed or debilitated state allow tubercle bacilli to pass through into the lymph vessels beyond. Many authors have called attention to tuberculosis of the tonsils, Cohnheim and Weigert in 1884 being the first. Schlenker in 1893 established the correlation between tuberculosis of the tonsils and tuberculous cervical lymph nodes. In 1894, Lermoyez showed that there are two types of adenoid tuberculosis, one macroscopic and the other recognized only by the microscope. Dieulafoy in 1895 emphasized the frequency of latent or larval tuberculosis of all three tonsils, as determined by animal inoculation. Straus, Wright and others have found tubercle bacilli in the nasal fossæ of healthy individuals. There is no doubt that the bacilli can pass through the mucous membrane without producing any lesion. Cornet, cited by Dowd, brushed tubercle bacilli on the nasal mucous membrane of healthy animals and later found enlarged tubercular cervical lymph nodes, the mucous membrane showing no lesions. Adenoids and large tonsils, by causing mouth breathing and stagnation of the nasal mucus, predispose greatly to tuberculosis of the tonsils and to tuberculosis and suppurative inflammations of the cervical lymph nodes. Though the faucial tonsils may occasionally become infected by tubercle bacilli in the milk or in the sputum (Schlenker), undoubtedly the infection is almost always from the air, either inspired through the nose or inhaled through the mouth.

LATENT TUBERCULOSIS OF THE LYMPH NODES IN INFANTS.

Recently the subject of latent, or as the French call it, larval tuberculosis has engaged a great deal of attention, especially since von Behring's pronouncement that tuberculosis in adults is a development of the latent tuberculosis acquired from the alimentary tract in infancy. Allan MacFadjen and Alfred MacConkey, in the experimental examination of mesenteric lymph nodes, tonsils and adenoids, pulverized and injected the mesenteric lymph nodes from twenty-eight children. Eight of these children had various forms of tuberculosis, but the other twenty had none; none of the

twenty-eight had any intestinal symptoms. Of the twenty autopsied with no tubercular foci found, there were results by the gland inoculations from five children (two, 6 mos., one stillborn, one 2½ years, and one 8 years old). In two of these tuberculosis was demonstrated by microscope; so that only in three of these was the tuberculosis truly latent. Their investigation of tonsils and adenoids yielded no positive results. Of greater interest, however, in connection with cervical tuberculosis is the fact that extension to the lungs or other organs occurs in over one-fourth of those cases in which the lymph nodes are not removed. Why may not many cases of lung tuberculosis arise from latent—not evident—tuberculosis of the cervical lymph nodes?

Harbitz, of Kristiania, in a very interesting and careful monograph, recently published, reviews the literature to 1905 and submits the results of his own investigations of lymph node tuberculosis in children. He makes a particular study of latent tuberculosis, meaning by this the presence of tubercle bacilli in the lymph nodes without any macroscopic or microscopic evidence that they are thus infected. The discovery and proof of the larval bacilli are made by inoculation into guinea pigs. Out of 142 necropsies on children, 73 were proved by absence of anatomical changes and by negative inoculation experiments to be free from any infection by tubercle bacilli. Sixty-nine had tuberculous infection, but of these 18 had the infection in latent form in the lymph nodes, discoverable only by inoculation. Of these 18 cases of latent lymph node tuberculosis, ten occurred in infants under one year; the youngest was one month, twenty-two days, and five others were six months old or younger.

As to the particular groups of lymph nodes involved, in 13 out of the 18 cases the cervical chain was infected, and as has been noted heretofore, ten of these cases were one year old or younger. The occurrence of so many instances of latent lymph node tuberculosis, demonstrable only by inoculation, in this Norwegian series calls attention to the need of more careful study of our cases in this country.

Notwithstanding these frequent findings of tuberculosis in infants, Harbitz is careful to add that enlargement of the cervical and other lymphatic nodes, due to chronic pyogenic infection, is more common in children than is their infection by the tubercle bacillus.

THE RELATION OF THE BACILLI BELONGING TO
THE SO-CALLED DYSENTERY GROUP TO THE
DIARRHEAL AFFECTIONS OF INFANTS.*

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It is with much misgiving that at the request of our President this paper has been prepared upon "the relation of the bacilli belonging to the dysentery group to the diarrheal diseases of infancy."

The present is a particularly inopportune time for any satisfactory statement in this field of observation and investigation.

A few years ago, in reliance upon the highest authorities, one could express the opinion that although many of the diarrheal conditions especially prevalent among infants and young children during the heat of the summer months were probably infectious, and produced directly or indirectly by bacteria, no one variety of germ was to be associated with a large group of these cases.

The infant death rate from diarrheal diseases in our crowded communities, recurring with the return of the summer season, although considerably lowered in recent years, still assumes the proportion of a devastating epidemic. Few civilized temperate communities escape, but the mortality seems highest in some of the larger cities on the Atlantic seaboard.

Although young children are particularly prone to diarrheal diseases, these disorders are not infrequent among adults, and have occurred in epidemics from time to time in all countries, especially in those having a warm climate.

Epidemic diarrhea or dysentery has played a gruesome part in many extended military campaigns of ancient and modern times. Its ravages during our Civil and Spanish-American Wars are notorious. The infectious nature of these cases was long suspected, but it remained for the distinguished Japanese investigator, Shiga, to associate a hitherto undescribed microorganism with a number of cases of acute diarrhea which occurred in Tokio

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in 1897 and 1898, and, after a thorough study, to announce the so-called Shiga, or dysentery bacillus, to be the cause of acute epidemic dysentery in Japan. It seems that Japan has been swept repeatedly by severe epidemics of dysentery. The number of those affected has reached 125,000 in a single year. A few sporadic cases are always present. Nearly all the susceptible persons contract the disease, which varies greatly in severity from an indisposition of a few days' duration to a rapidly fatal illness, associated with marked ulceration and necrosis of the intestinal mucosa.

The history of our knowledge of the dysentery bacillus has been recited so often that it need not be repeated here. The same or a very closely-related organism was shortly afterward found by Flexner, in cases of epidemic diarrhea occurring in the Philippines, and since then numerous epidemics in various parts of Europe, China, India, Porto Rico, Central America and in the United States have all been proved to be due to this group of bacilli.

The organism is found in the dejecta of the patients, embedded in the intestinal mucosa and in the adjacent lymphatic glands, very rarely in the other organs or in the circulation. It is agglutinated usually by the blood of the patient and is pathogenic to animals. In some instances, an intestinal condition very similar to true dysentery has been produced experimentally.

During the summer of 1902, while investigating a series of infants suffering from diarrheal disorders, Duval and Bassett found the dysentery bacillus in 42 out of 53 cases examined. A careful consideration of the clinical histories of these patients failed to disclose that the particular infants studied exhibited any symptoms uncommon in the usual diarrheal disorders of the summer. In the group were babies evidently acutely toxic, and others in whom the tenesmus and the character of their stools indicated an inflammatory involvement of the lower bowel. There was no macroscopic blood in the discharges of 13 cases, and blood was present only as an occasional fleck in 18 additional instances. The organisms isolated agglutinated in high dilutions with anti-dysenteric serum, and were markedly pathogenic.

It seemed, therefore, that there was good reason for the supposition that a number of the intestinal disorders occurring among infants and young children in the warm weather were produced by the dysentery bacillus, shown to be the cause of many epidemics of dysentery among adults.

It was necessary, however, to have these important findings confirmed, and to determine whether the same organism could be associated with the diarrheas of children in other localities. Accordingly, the following summer, the Rockefeller Institute for Medical Research, under whose direction the first investigation in children was made, undertook a collective research in several of our large cities. The results of these studies as collected by Drs. Flexner and Holt are well known.

Previous to this work, however, it had been found that several types of dysentery bacilli could be distinguished by differing agglutination reactions and by certain cultural properties in the presence of special carbohydrates.

It was shown that there were at least two distinct varieties, one represented by the original organism isolated by Shiga, and the other by the bacillus discovered by Flexner in epidemic dysentery in the Philippines. One or the other of these two chief types has been present in the European epidemics. It became of interest therefore to determine which variety of the dysentery organism was most concerned in the diarrheas of infancy.

Of the 412 infants made the subjects of the investigation referred to, some variety of the dysentery bacillus was found in 279 instances, or 63.2 per cent. There were marked differences in the percentage of successful isolations in the hands of the various workers.

A very large proportion of the organisms isolated belonged to the so-called Flexner type, including the closely related "Y" organism of Hiss. The clinical manifestations presented the same variations wherever studied. It was shown that infection with the dysentery bacillus was associated with almost every sort of intestinal disturbance accompanied by diarrhea, except with cholera infantum, of which rare condition no cases were studied. This bacillus was more prevalent in the inflammatory forms of diarrhea, but was found in affections of all degrees of severity, the mildest and the most severe, the acute, the protracted and the subacute, and often occurring in institutions during the summer as a terminal infection.

No such extended work upon this important subject has been since undertaken. It can be regarded as proved that the same proof exists for the causal association of bacilli of the dysentery group with a fairly large number of the diarrheas in infants, oc-

curring along the Atlantic seaboard, as is at hand to prove that the same bacillus produces epidemic dysentery in adults.

There were many questions, however, left unsettled in this investigation. Upon some of them additional light has been shed by more recent studies, others remain unsolved.

In the first place, the rôle played by other organisms or their products in the production of a large number of these cases is probably still a large one.

More than twenty years ago Escherich pointed out that there were varieties of the colon group—as a rule, normal and harmless inhabitants of the intestinal tract—which were highly toxic and irritant to the intestinal mucosa.

Some years later, in an exceedingly thorough research, which seems to have attracted much less attention than it deserves, Flüge demonstrated the presence in milk of several strains of anaerobic bacteria and of peptonizing bacteria, which produced spores and were not destroyed by the ordinary methods of sterilization and which produced markedly toxic effects upon laboratory animals. He called attention to the fact that the spores of these peptonizing bacteria, remaining viable, rapidly multiply in milk even at a moderately low temperature. They do not curdle the milk, but bring about marked changes in that medium before their presence is recognized. The destruction of the ordinary lactic acid bacteria, by imperfect sterilization, increases the rapidity of their growth. Flüge considers that many of the diarrheas occurring among young children in the summer are due to these more or less neglected organisms.

Tissier has recently called attention to an anaerobic peptonizing bacillus, which he considers to be the cause of certain diarrheal cases. This writer, Moro and Dunn and others have reported favorable results in treatment from the ingestion of lactic acid producing bacteria known to be antagonistic to certain forms of fermentation.

Many observers have demonstrated the presence of streptococci in the diarrheal stools of these cases. It is still undetermined whether they are not for the most part secondary invaders, as they have been shown to be in other conditions; and perhaps more concerned with the production of the anatomical changes in the intestinal mucosa than in the primary infection. Moreover,

streptococci are frequently found in normal stools. The streptococci isolated are often pathogenic to laboratory animals. The *B. Proteus vulgaris* is usually found in the dejecta, and has been occasionally shown to be definitely toxic. The same is true of a number of other bacteria of the intestinal flora. Several epidemics of diarrhea due to the action of bacillus pyocyaneus have been described, notably by Lartigau, Calmette and Maggiora.

Undoubtedly certain cases of diarrhea in children are not produced directly by bacteria at all, but as the result of the poisonous or irritant character of the ingested food. The acids of fruits, the toxins of fish, various vegetables, ice-cream, and of the other substances giving rise to so-called ptomain poisoning, are all associated with diarrhea. Other forms are purely nervous in origin.

Moreover, it must be freely granted that in many of the cases of intestinal disorder reported as produced by the dysentery bacillus, that organism has been found in the stools in very small numbers, two or more colonies among many of colon bacilli or other organisms on the plates.

It is well known that dysentery bacilli are rather difficult to detect unless the investigator has had some special training, although it may well be true that the presence of a single definite dysentery bacillus in the dejecta may be evidence that there are many more in the intestines. A similar inference would be justified from the isolation of a single typhoid bacillus from the stools.

On the other hand, there have been a few observations in which dysentery bacilli have been found in small numbers in the discharges of apparently normal infants. The importance of the investigation of normal stools for the dysentery bacillus was of course recognized from the beginning, and many attempts have been made to find it, for the most part without success. In practically every instance in which the dysentery bacillus has been isolated from normal stools, the child had either previously had diarrhea, or had been exposed to infection from other cases. Further evidence is therefore needed to sustain the claim of some who consider the dysentery bacillus a normal inhabitant of the infant's intestinal tract, although this statement cannot at present be categorically denied.

On the other hand, it is known that dysentery bacilli may persist for a long time in the stools. Like typhoid bacilli, they

may be present in convalescent cases and in the dejecta of well persons who have been exposed to infection without setting up an illness. It is easily conceivable that under these circumstances an intercurrent diarrhea may be induced by another cause, mechanical, nervous, toxic or bacterial, and which may or may not be followed by infection with the dysentery bacillus.

Nevertheless, the conclusion would seem warranted that when there are found in an infant's diarrheal stools many organisms of proved pathogenic properties, and which are known to be the cause of a severe form of dysentery, that these organisms should be considered causally related to the intestinal disorder. This assumption is strengthened when the bacilli in question are agglutinated by the patient's blood.

From the time of the association of the dysentery bacillus with many of the intestinal disorders of infants, attempts have been made to connect this organism with some definite clinical type of disease. These efforts have been unsatisfactory. Wherever a series of cases of infantile diarrhea, occurring along our Atlantic coast in summer, has been thoroughly studied by competent bacteriologists, in a considerable number of instances dysentery bacilli have been found. Such a series includes, according to careful clinical observers, the so-called acute toxic cases, with or without marked alteration of the intestinal mucosa, as well as those of longer duration, many of them with extensive destruction of the intestinal mucous membrane. As was shown in the collective investigation, a large number of the infants affected were suffering from previous malnutrition. It would seem therefore unsatisfactory, after deducting the diarrheas of nervous or mechanical origin, to attempt any etiological classification without proof in each case.

The division of the dysentery bacilli into groups has been of special interest to pediatricians, for it was soon found that infants were comparatively rarely affected by the variety described by Shiga, but in the majority of instances by the strain first isolated by Flexner in the Philippines, or by one of several closely related varieties.

In the experience of Dr. Park, of New York, infection with the true Shiga bacillus is more apt to be severe than is that with the Flexner type. Escherich finds this to be true of children in Vienna. Kruse has sought to limit the term "dysentery bacillus"

to the original Shiga type, calling all other related organisms pseudodysentery bacilli.* This conception will probably be shown to be incorrect, for subsequent study by Shiga and others indicates that in Japan there is also a *group* of dysentery bacilli, all associated with the disease.

Ohno, a Japanese bacteriologist, after an exhaustive study, is able to distinguish 15 sub-groups of dysentery bacilli, because of slightly different action on various carbohydrates. In his opinion, there is no special reason for the separation of dysentery bacilli into acid and non-acid types from their action on mannite, as both types produce severe symptoms in both sporadic and epidemic cases. The true Shiga bacillus, he asserts, may produce mild cases. Moreover, the grouping of the organisms, isolated according to their fermentations, does not correspond in his experience to the differences as made out by agglutination and bacteriolytic tests.

Dopter, in France, also holds that there is a specific unity among the various types and that they should all be called dysentery bacilli.

Russian and Japanese bacteriologists found both the Shiga and Flexner types of the dysentery bacilli in the limited outbreaks that occurred among the troops in Manchuria during the recent war.

Subsequent experience confirms the early statements that the diarrheal conditions in infants and young children are more often associated with the Flexner variety, or some of the types very closely related to it, than with the original Shiga strain. Several types may be found together. Thus, in the examination of a consecutive series of 74 cases of infantile diarrhea, occurring two years ago in Baltimore, the dysentery bacillus was isolated from 42 cases. Of these cases, in but 3 was the original Shiga type of dysentery bacillus isolated alone; in 14 cases the variety known as the Hiss "Y," very closely related to the Flexner bacillus, was found alone; the latter was present alone in 6 cases, while in 13 instances more than one variety of dysentery bacilli was isolated. In 11 additional cases, pathogenic streptococci were found in association with some form of dysentery bacillus. Although this series is much too small to justify any dogmatic statement, the study suggested that the severest disorders take place in children infected with more than one variety of dysentery bacillus, or where

* So impressed is Park with the greater severity of the infections with the original Shiga cultures that he suggests calling all other types "paradysentery bacilli."

streptococci are present in association with dysentery bacilli. Of the cases in which a single type was found alone, those from which the Hiss "Y" variety was isolated seemed most severe. The cases in the series in which the original Shiga type was found were too few to lead to any conclusion as to the comparative toxicity of that organism. The statement of Park, Escherich, Kruse and others that, as a rule, infections with this particular variety are more severe, could not be controverted by our experience.

Jehle and Charleton, in an outbreak of diarrhea in the clinic of Profesor Escherich at Vienna, some years ago, found the Flexner form somewhat more often than the true Shiga bacillus. They were unable to isolate the organism in other varieties of intestinal disease. Later, Jehle described dysentery bacilli of the Flexner type in an epidemic of diarrhea in the same clinic. He considers these cases quite distinct from summer diarrhea, but his clinical summaries, and, in a few instances, the autopsy findings, agree perfectly with many of the bedside and postmortem records in the large epidemics which sweep over our American cities each summer.

The Flexner bacillus has been isolated lately in France by Auché and Campana from a large number of infants with mucous diarrhea, and, among others, Morgan, in England, has found both forms of the dysentery bacillus, together with a motile bacillus, with which he is able to produce diarrhea in experimental animals, in a small number of similar cases.

A study of the probable manner in which the dysentery bacillus affects the intestinal tract has been made recently by Flexner and Street. They show that Shiga and Flexner forms are about equally toxic, and that the latter variety produces a soluble toxin in the animal body. The intestinal lesions, edema, hemorrhages, and occasional necroses, which are more severe in the colon than elsewhere, are brought about by successive acts of excretion, largely by the colon, of the soluble toxins absorbed into the general circulation from the higher portions of the intestines.

The method of propagation of the dysentery bacillus is still largely undetermined, but several significant facts seem to be established in this connection. In the first place, dysentery bacilli apparently have no natural habitat outside the human body. They have never been found in animals except as the result of intimate exposure from infected cases, or from direct inoculation. Moreover, the life of all varieties of the dysentery bacillus is com-

paratively short outside the body. According to Frost and Whitman these bacilli may live from four to nine days on merchandise, such as paper, cloth, wood, at a temperature of 17° to 20° C.; while on dried food substances, such as bread, albumen balls, they may survive nearly a month; and in sterile milk until the media is dried up; in sterile water its life is short, rarely more than a week. The Shiga is less resistant than the Flexner-Harris type.

The viability of the organism in water has lately been tested by Vincent. He finds that it may live twelve to fourteen days in sterile distilled water, not so long in sterile spring or river water. The organism lives longer in the dark and at low temperatures. It is very sensitive to direct sunlight, being killed in two and one-half hours in running water exposed to the light. It never multiplies in water, and is destroyed in two to six days in water by saprophytic bacteria.

Again, there is abundant evidence that dysentery bacilli may remain viable for long periods in the intestines of patients after the cessation of all symptoms; they may be harbored, also, by persons who have been exposed to infected patients and who themselves remain perfectly well.

This in recent years has been shown to be true of the typhoid bacillus by Koch, Remlinger and others. It has been suggested that the principal retreat of these persistent typhoid bacilli is not the intestinal tract, but the bile ducts, from which they are swept at intervals into the duodenum. A similar condition may be true of the dysentery bacilli.

From these facts the conclusion at least seems probable that the organisms which produce epidemic dysentery among adults, and many cases of diarrheal disorders among infants and young children, are kept alive in the intestines of ill or convalescent patients, or of those who have been exposed to the disease. Sporadic cases, due to infection with the dysentery bacillus, have been repeatedly shown to occur here and there, throughout the year, in both adults and children. These provide the nidus for the outbreak which takes place among those more susceptible with the return of hot weather. It is of the utmost importance, therefore, that those having the care of these patients should carefully disinfect all the discharges, both urine and feces, as well as the bed-linen, clothes, etc., which have come in contact with the patient; in

short, they must use all the precautions found of service in the prevention of typhoid fever.

During epidemics, water should be boiled, and all food, including milk, heated. In hospitals, the nurses, going from patient to patient, are a real source of danger unless great care is observed. Unquestionably insects, especially the common house-fly, can convey both typhoid and dysentery bacilli from stools to food.

The rôle played by other factors, even in cases known to be infected by the dysentery bacilli, is being more and more recognized. The large number of instances of terminal infection, following chronic and wasting diseases, has already been referred to. Moreover, there is frequently a history of some antecedent dietary indiscretion, which sets up a gastrointestinal indigestion, mild in itself, it may be, but sufficient to lower the body's resistance to a few dysentery bacilli present in the intestinal canal. These facts afford additional grounds for guarding against the less severe intestinal disturbances.

Shortly after the discovery by Shiga of the dysentery bacillus, the treatment of bacillary dysentery by the use of antitoxin was undertaken. The results in Japan have been from the first highly encouraging. The serum was obtained from horses which had been gradually immunized against large doses of an active culture of the organism. The average death rate from the disease was reduced from about 30 per cent to less than 10 per cent and a marked improvement in the symptoms was noticed in nearly all cases following the injection of the serum. Serum prepared in a similar manner has been repeatedly used in various outbreaks of dysentery in Europe. Although the results have not been so uniformly good, it seems undoubtedly true that, in many cases, it had a definite, specific curative effect. Laboratory studies showed that the antidysenteric serum protected susceptible animals from the lethal doses of dysentery bacilli. The serum itself was found to be harmless.

The association of the dysentery bacilli with many cases of infantile diarrhea naturally led to the hope that in the serum treatment an efficient curative remedy might be furnished for these disorders. A number of cases were so treated in Baltimore during the summer of 1902, and the next season a more extended test was carried on in several clinics as a part of the study directed

by the Rockefeller Institute. As is well known, the results obtained were disappointing. Of 87 cases, in only 12 was there any improvement noted after the injection of the serum, and in nearly all these cases the betterment might have been properly attributed to other factors. Many of the infants so treated were malnutritive, and most of them had been ill for several days before receiving the serum. Still, it was fair to conclude that for these disorders in young children the particular serum used was not curative.

Further experience with adults and children, and particularly laboratory experimentation, has done much to explain these unpromising results. Thus, it has been shown by Conradi, Neisser and Shiga, Rosenthal, Todd, Flexner, Kraus and Döerr and many others that bacilli belonging to the original Shiga strain produce, in cultures or in suspension, a definite soluble toxin, against which an antitoxin has been obtained from the serum of immunized animals. This serum has been shown by Kraus and Döerr to neutralize the toxin both *in vitro* and in the body of a susceptible animal, and to be curative when it follows the toxin, even after a considerable interval.

Moreover, in addition to the accumulation of experience with the serum in Japan, there is indisputable evidence of the therapeutic value of antidysenteric serum in a large number of dysenteric cases elsewhere.

Thus, in Moscow, during an epidemic of dysentery, the mortality in a hospital in which antidysenteric serum was used was 4.5 per cent as compared to more than 10 per cent elsewhere, the average death rate from the disease for more than ten years being 17 per cent. The serum apparently diminished the intensity of all symptoms and shortened the length of the illness.

During the Russian-Japanese War, at Kharbin and other places, the use of serum was followed by prompt and lasting improvement in the condition of the patients.

Striking results have also been reported by Rosculet in Roumania. Forty-seven cases were treated by serum prepared by Kraus in Vienna. Improvement took place in a few hours after the injection. There were no deaths, although a mortality of 12 per cent to 35 per cent had been common in other epidemics. Three children, between two and three years of age, were included in the series. Only the Shiga variety of the dysentery bacillus was found.

An interesting experiment in prophylaxis is recounted. Eighteen persons who had been exposed to the disease were given 5 cc. of the antitoxic serum. None contracted dysentery, while among a second series of 18, likewise exposed and receiving *no* serum, 14 developed the disease.

Ludke has also reported a number of dysentery cases markedly improved by the Kraus serum. He has also produced a strong toxin by grinding the bacilli and extracting in salt solution.

The most outspoken testimony in support of the value of a specific serum in the treatment of bacillary dysentery is that of Vaillard and Dopter from the Pasteur Institute. For the last four years these investigators have been immunizing horses against dysentery bacilli and their toxins, using cultures from Kruse's laboratory. They were able to obtain an antitoxic serum which has preventive and curative properties as against both the organism and its toxin.

This serum was used in 96 cases of various degrees of severity. In all cases there was improvement, as evidenced by a diminution in the number of stools, less tenesmus, less blood and by a more rapid recovery. The average duration of dysentery usually is ten to thirty days; that of the cases treated varied from two to six days. The dosage was varied from 20 to 100 cc. according to the severity of the illness. The serum was more valuable when given early, though it had effect later in the disease. One case was treated successfully, beginning sixteen days after onset. They claim that the serum is equally efficacious against both Shiga and Flexner types, but, as they do not specifically assert that a mannitol-fermenting organism was employed, Dr. Flexner thinks one of this group was not studied. No children were included in their series.

Jehle, from Escherich's clinic, however, has reported 2 cases, four and one-half and two and one-half years of age, suffering from infection with the original Shiga strain, which were greatly helped by the Kraus serum.

More lately, Auché and Campana, however, have treated 19 cases in children, varying in age from three weeks to twelve years, with uniformly good results. One case only died from a complicating bronchopneumonia. These writers emphasize that in children, particularly, the clinical picture produced by this infection varies greatly.

Some cases could only be told from simple diarrhea by the

blood-reaction and the presence of bacilli in the stools. The writers assert that three forms of dysentery bacilli were found—the Shiga, the Flexner and the Strong—but that serum was more effective for those children infected with the original Shiga variety. The Flexner strain was found in the fatal case.

Further cases, 33 in all, are added by Campana in a subsequent paper. In each, following the administration of serum, the stools became fewer, the pain less, and the general condition improved.

An examination of the reports here referred to, coming both from the laboratory and the bedside, tends to establish certain facts, and explain others which were before doubtful. It can no longer be questioned that the true Shiga bacillus does produce in culture media a soluble toxin, and that an antitoxin is produced in the blood of susceptible animals which is a valuable specific curative agent. It seems also to be true that there are several other closely-related strains of the dysentery bacillus which differ culturally but little from the original type and less from each other, which are almost, if not quite, as pathogenic for laboratory animals, but which do not lend themselves to the production of a soluble toxin, and against which no satisfactory antitoxin has been as yet produced.

Children are susceptible to infection by all three forms, but experience heretofore has shown that infants are rarely invaded by the original Shiga variety, and then after definite exposure to the disease in adults, but that strains of the dysentery bacilli, that ferment mannite, are much more frequently found in the widespread diarrheal disorders which affect infants in the summer.

It is, of course, recognized that gastrointestinal affections with diarrhea can be brought on by various indiscretions in diet, by mechanical and chemical means, and by other bacteria than dysentery bacilli, and also that some such disturbance frequently precedes infection with the dysentery bacillus. It is true also that the dysentery bacilli may be present in the dejecta of infants exposed to infection, without setting up any disorder until the patient's resistance is lowered. The organism probably has no natural habitat outside the body, and is kept alive by the occasional epidemics and the sporadic cases which occur throughout the year. The virulence of the infection and the character of the pathological changes in the intestines vary greatly. The presence of the pseudo-

membrane is much less common in children, perhaps because this lesion is especially produced by the original Shiga type.

Further study is needed to ascertain if there may not be found some clinical phenomena which can be more surely associated with infection with dysentery bacilli. The exact method of propagation of the disease also needs further investigation. It is quite possible that additional research will develop an antitoxin for the Flexner variety and its closely-related mannite-fermenting organisms. Kraus and Stenitzer claim to have done this recently with some typhoid bacilli, which have been made to produce a soluble toxin from which an effective antitoxin has been made. Similar methods may succeed in the cases of the obdurate strains of dysentery bacilli.

POSSIBILITIES FOR COMPLETE PARENTERAL NUTRITION. A. WRETTLIND. (*Nord. med.*, 53:1013-1019, June 30, 1955). Amino acids administered parenterally are utilized for synthesis of the body's protein and can be given to maintain or improve the protein nutrition. Parenteral nutrition includes amino acids and salts and carbohydrates in the form of glucose or fructose together with vitamins. By infusion of amino acids with carbohydrates, positive nitrogen or protein balance can be achieved in a number of cases even though the body's caloric need is not covered. If parenteral nutrition is to be complete, amino acids, glucose, and fat must be present in the solution. Fat in an emulsion for intravenous use must be finely dispersed; the aim is usually to keep the diameter of the particles at .2-1 μ . Parenteral administration of fat, so that the entire caloric requirement can be met parenterally, is being studied intensively, and routine administration of amino acid-glucose-fat emulsions containing the necessary salts and minerals in conditions where complete parenteral nutrition is necessary may be looked for in the near future. No method is at present available for producing these emulsions in such a way that they may be stored for any length of time.—*J.A.M.A.*

DEPARTMENT OF ABSTRACTS

Conducted by

MICHAEL A. BRESCIA, M.D., NEW YORK

JOHNSON, A. M. and GIFFIN, M. E.: THE DISTURBED CHILD. (Postgraduate Medicine, 22:220, September 1957).

We have briefly reviewed some of the problems presented by disturbed children. Their presence is everywhere, and our plea to the general practitioner is that of sensitization to their ubiquity. The socially disturbed, the acutely anxious and the delinquent need immediate psychiatric referral. The schizophrenically disturbed need careful psychiatric observation, preferably in a hospital. With regard to the chronic, emotionally disturbed, much depends on the time available to the practitioner for inquiry into intrafamilial and intrapsychic conflicts. As practitioners gain confidence in the importance of emotional factors, they will feel more assured about their own inquiry, and psychiatric referrals will be made without apology. Children rarely show embarrassment at seeing a psychiatrist, but the physician's apologetic referral may heighten the parent's shame to the point of great and unnecessary distress. With our present emphasis on total medical care, inquiry into emotional problems must become an integral part of a medical evaluation.

AUTHORS' SUMMARY.

SYVERTON, J. T.; McLEAN, D. M.; DA SILVA, M. M.; DOANY, H. B.; COONEY, M.; KLEINMAN, H., and BAUER, H.: OUTBREAK OF ASEPTIC MENINGITIS CAUSED BY COXSACKIE B5 VIRUS. LABORATORY, CLINICAL AND EPIDEMIOLOGIC STUDY. (Journal American Medical Association, 164:2015, August 31, 1957).

In Minnesota, Cocksackie B5 virus was isolated from sixty-one patients, ill with aseptic meningitis between July 17 and Nov. 24, 1956. Titers of antibody in thirty-two patients confirmed infection with Cocksackie B5 virus. Paralytic poliomyelitis was not encountered in rural localities where patients were suffering from aseptic meningitis, and serologic findings showed that these sixty-one patients were not commitantly infected with poliovirus.

AUTHORS' SUMMARY.

WELCH, R. G.: ADDISON'S DISEASE IN A NINE-YEAR-OLD GIRL. (British Medical Journal, 5025:980, April 27, 1957).

A fatal case of Addison's disease due to atrophy of the adrenals in a girl of 9 years is reported. The picture of progressive weakness and listlessness, of vomiting and anorexia, and the development of pigmentation is typical of the condition. Until the onset of crisis, her blood pressure was normal. The recent literature on Addison's disease in children is reviewed. In the past ten years, more than one-half of the cases reported with a known pathology have been due to atrophy of the adrenal (adrenocortical contraction), and only one-tenth to tuberculosis—a great change from the findings in a previous review of the subject. Over one-third of the cases showed evidence of a craving or increased liking for salt.

Author's Summary.

GREENBERG, M.; PELLITTERI, O. and BARTON, J.: FREQUENCY OF DEFECTS IN INFANTS WHOSE MOTHERS HAD RUBELLA DURING PREGNANCY. (Journal American Medical Association, 165:675, Oct. 12, 1957).

A prospective study of pregnant women with rubella was carried out in New York City from 1949 to 1955. Of 104 women who had rubella during the first trimester of pregnancy, 27 per cent gave birth to normal infants, 3 per cent of congenitally malformed babies, 3 per cent to stillbirths, and 12 per cent to other nonviable fetuses. Therapeutic abortions were performed on 46 per cent, and 10 per cent of the cases were lost from the study. The incidence of congenital deformities among the live-born babies of women with rubella during the first trimester was 9.7 per cent in a similar study elsewhere in New York City of pregnant women who did not have rubella, reported recently, the incidence of congenital malformations was 7 per cent if only defects of the brain, eyes, ears, and heart are considered in the latter study, the incidence was 1.9 per cent. Large scale prospective studies with controls are needed to ascertain comparative rates of incidence. The available data indicate a rate of about 12 per cent of total births. The fantastically high rates set by early authors were based on retrospective studies of malformed infants, which did not account for babies who were born normal and who, therefore, escaped from the study and hence are incorrect. Blanket advocacy of therapeutic abortion in pregnant women who develop rubella during the early months of pregnancy is medically unjustified.

AUTHORS' SUMMARY.

BOOK REVIEWS

Conducted by

MICHAEL A. BRESCIA, M.D., NEW YORK

THE PATIENT SPEAKS. By Harold A. Abramson, M.D. Cloth. Pp. 239. Price \$3.50. New York: Vantage Press, 1956.

This book contains the oral outpourings of a woman to her psychoanalyst for over three hundred sessions so that she could be "cured" of her main somatic complaint which was an eczema beginning in childhood. Of course, since in this particular patient the eczema was due to psychic causes, she was non-responsive to the many therapies of many doctors including allergists. The author states in the introduction, "You will see how her abnormal responses, almost hypnotically provoked in her early childhood by a terrifying mother, were reoriented". The child and then as a woman, she was greatly influenced by her mother, the more dominant of the two, as most of us are influenced for good or evil, by our parents. Some children can withstand these pressures and some cannot as evidenced by the extreme example of this case. There probably are many other conditions, mostly subclinical, that are based on the early influence of the parents. The author refers to the condition of his particular patient as the "Cronus complex", named for the God Cronus, who swallowed his own children. This book has limited value to the pediatrician unless he is interested in psychoanalytic techniques.

MICHAEL A. BRESCIA, M.D.

THE MERCK MANUAL OF DIAGNOSIS AND THERAPY. 9TH ED.
Edited by Charles E. Lyght, M.D. Cloth. Pp. 1870. Price \$6.75.
Rahway, N. J.: Merck & Co., 1956.

The Merck Manuals have gained wide acceptance since they were first published some sixty years ago. These pocket (sic) sized books are most useful for quick reference on a host of subjects and are certainly worth having within easy reach. The many prescriptions and charts enhance the practicality of the volume, which has been brought up to date by including the many new drugs and discussing, among other things, agammaglobulinemia, kwashiorkor and mucoviscidosis.

MICHAEL A. BRESCIA, M.D.

A COMPILATION OF PAINTINGS ON THE NORMAL AND PATHOLOGIC ANATOMY OF THE DIGESTIVE SYSTEM. PART III, LIVER, BILIARY TRACT AND PANCREAS. VOL. 3. By Frank H. Netter, M.D., Edited by Ernst Oppenheimer, M.D. Cloth. Pp. 165. Illustrated. Price \$10.50. New York: The Ciba Collection of Medical Illustrations, 1957.

If a medical book can be called enchanting, this volume is. Netter might be called the Walt Disney on medical subjects. The anatomy and various states of disease come to life in the clear illustrations and the accompanying brief but cogent text. The book will be of interest to the pediatrician not only because of the illustrations of the congenital anomalies of the liver, bile ducts, gall bladder and pancreas, but also because of the brief illustrative accounts of many conditions that are seen in infants and children. This is the type of book most would like to have in their library. M.A.B.

THE AMERICAN FLUORIDATION EXPERIMENT. By F. B. Exner, M.D. and G. L. Waldbott, M.D. Edited by James Rorty. Cloth. Pp. 241. Price \$3.75. Devin-Adair, 1957.*

A definitive up to date report has been written by two eminent physicians on the subject of fluoridation of water supply. The evidence and strength of the arguments against fluoridation are a revelation and in strange contrast to the overwhelming barrage of favorable sentiment appearing in the regular channels of communication. This paradox is by no means accidental as the authors point out. The Public Health Service has resorted to propaganda in favor of fluoridation and has succumbed to many of the evils which are attendant upon a dogmatic position. When officialdom arrogantly assumes an air of infallibility and an attitude of indifference to the public, then serious danger lurks in high places. While many opponents of fluoridation rest their case on moral and constitutional grounds, there exists an abundance of scientific evidence which demonstrates the alarming danger of fluoridation.

Writing with cold objectivity and with precision, the authors dissect and expose the barrenness of the claims favoring fluoridation unmercifully, but with a scholarly distinction. How a program of such magnitude, resting as it does on such a feeble foundation, has achieved such popularity is a deplorable tribute to the machinery of propaganda and a disheartening commentary on the super-

ficiency of some so-called experts. The engineering difficulties and dangers in fluoridating water are presented in a chapter which should make the readers thankful for the water engineers who apparently know their business well.

This should be required reading for medical and dental societies at all levels and all public health commissioners. Chairmen of public health committees are duty bound to read this book and report to their parent organizations which all too often have endorsed fluoridation in parrot-like fashion totally unaware of the case against fluoridation. Proponents of fluoridation must refute the charges contained therein, an unenviable task. Opponents of fluoridation will find an armamentarium of considerable dimensions. The writers and publisher have rendered a needed service with this book.

S. J. BAUDO, M.D.

* Reprinted from the May Issue, Vol. 74, No. 5, 1957 by numerous requests.

Evaporated Milk in Infant Feeding. P. D. Moss. (*Brit. Med. J.*, 1:1453-1455, June 22, 1957). Evaporated milk is considered a perfectly safe infant food, as the process of sterilization is such that a buildup of a micrococcic (staphylococic) count is virtually impossible, final sterilization completely eliminating any live organisms or spores. Should the milk contain a toxin prior to its arrival at the processing plant, the extensive dilution in the bulk-ing process alone is of such magnitude that the chance of gastrointestinal upset from that source is practically nil. The decision to use evaporated milk in lieu of all other infant foods rested on factors other than simple nutritional values. Evaporated milk is sterile, does not deteriorate, mixes easily (the end-product is homogeneous), does not separate out, possesses a fine soft curd, has less allergic properties, and can be used for infants of all ages. Infants changing from breast milk to evaporated milk exhibit little if any change in appearance. Evaporated milk has been used with no apparent derogatory effects in general wards for sick children, isolation wards, and outside the hospitals. No significant difference in the cost of evaporated milk and dried milk has been demonstrated.

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